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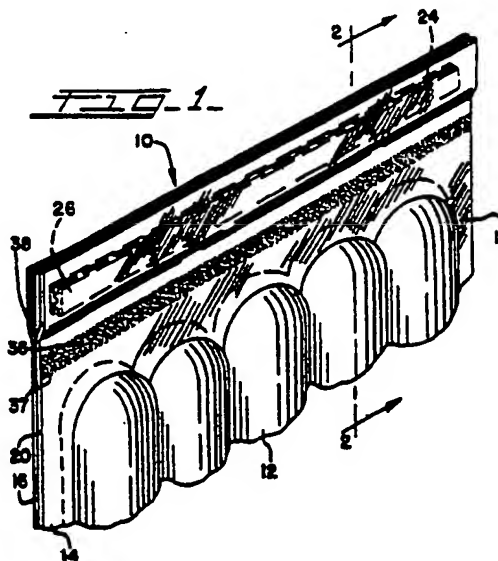
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(54) Easy open tamper-evident recloseable package.

(57) A flexible, recloseable package (10) includes a recloseable seal (24) disposed near the mouth of the package and a frangible web (38) connecting the recloseable seal components. A peel seal (37) is disposed between the recloseable seal and the package product (12). Attempts to open the peel seal and/or gain access to the package product will result in noticeable disruption of the frangible web (38).



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## Background and Summary of the Invention

The present invention relates generally to recloseable packages for hermetically sealing consumable products between generally opposing package side panels, and more particularly to recloseable packages for food products and the like having a peelable seal which secures together a product access edge of the package and which has a tamper-evident feature indicating prior opening of the package.

Flexible packages which have an inner, hermetic peelable seal and an outer zipper seal are presently known for packaging various food products, such as wieners, bacon, sliced luncheon meats, chops, cheese and the like. A common use of such packaging is to vacuum seal the food produce between two sheets of film material to form a generally rectangularly shaped package which is hermetically sealed (e.g., heat sealed) with a single, non-recloseable seal about three sides and which has an access opening at the fourth side which includes both a hermetic, non-recloseable seal and a reclosure seal.

When the access opening consists of an outer zipper reclosure seal and an inner, non-recloseable, peel seal, it has been found that the package may be opened and then reclosed without showing outwardly visible evidence of such openings. Thus, a package which has been opened and thereafter reclosed, but from which no contents have been removed, would have an outward appearance comparable to a package which retains its inner, hermetic peel seal. A consumer who purchases and thereafter opens a previously-opened package would, of course, especially for vacuum-packed products, be able to determine that the hermetic seal has been broken. Determining that a gas-flushed package had been previously opened might possibly be more difficult. It would, however, be preferred that it be readily apparent to the consumer in the store (i.e., before purchase) that the package had been previously opened.

Packages constructed in accordance with the principles of the present invention are tamper evident so that it is apparent to the consumer that the package has been opened upon casual examination of the package. Due to the hermetic peel seal, the package is liquid tight and suitably retains with the package, fluids of products contained therein, including water, juices, oils and the like. The package has a first, recloseable seal which can be opened and closed repeatedly in order to remove portions of the package contents. A "zipper" seal consisting of interengaging rib and groove fastener elements is the preferred recloseable seal means.

In addition, the package has a second, hermetic inner seal which is an easy-open or peel

seal. The peel seal is generally parallel to the recloseable seal and is opened with digital pull-apart forces which may be a continuation of the forces used to open the recloseable seal. The peel seal can maintain a vacuum, pressurized and/or a modified gaseous environment within the flexible package. The peel seal will be formed by effecting a face-to-face seal between two plies of plastic film with the strength of the seal permitting separation without destruction or tearing of either ply.

The package of this invention further includes a tamper-evident feature which is disposed in the package neck area between the recloseable seal and the hermetic peel seal which must be disrupted in order to gain access to the product. The disruption of the tamper-evident feature will provide visible evidence of the fact that entry to the contents of the bag, through the reclosure seal and the inner peel seal, may have occurred.

The present invention is directed to an improved recloseable package which provides readily discernible evidence of tampering.

In a recloseable package incorporating the principles of the present invention, evidence of tampering or prior opening of the package is accomplished by way of a flexible web which extends between the rib and groove fastener elements of a recloseable seal and which must be broken to reach the peel seal.

In one principal aspect of the present invention, the recloseable package has a first, recloseable seal assembly disposed near the access edge of the package and has a second, peelable hermetic seal disposed beneath the recloseable seal and near the product contained in the package. The recloseable seal assembly includes a web extending between the two opposing sidewalls, which web contains an area of frangibility. When the recloseable seal is opened to a width to allow access to and opening of the second, hermetic peel seal, the web is either partially torn or separates into two separate web portions at the area of frangibility, thereby indicating prior opening.

Accordingly, it is a general object of the present invention to provide an improved tamper-evident package having a first, recloseable and a second, peel seal without adding additional space on the package.

Another object of the present invention is to provide a recloseable package for food products having a recloseable seal disposed near an opening of the package, a peelable hermetic seal disposed near the food product and a tamper-evident strip which extends beneath the recloseable seal and above the peel seal and which strip indicates tampering with the peel seal.

Yet another object of the present invention is to provide an improved product package that incor-

porates a first, recloseable seal having integral tamper-evident characteristics in combination with a second hermetic peelable seal without incurring any, or only minimal, cost upcharge.

Still another object of the present invention is to provide a flexible food product package which has a recloseable seal and a peelable hermetic seal disposed parallel to each other proximate to an access edge of the food product package, the package having a frangible web extending between two opposing package sidewalls proximate to the recloseable seal, the frangible web having a central fold line so that, when folded upon itself, the web extends beneath the recloseable seal.

It is yet a further object of the present invention to provide a one-piece recloseable fastener-web assembly for use in a recloseable package, wherein opposed rib and groove fastener elements are disposed along a common face of a frangible web, the web being secured to two opposing package sidewalls and the web providing a tamper-evident feature for the package.

These and other features and objects of the present invention will become more readily apparent from a reading of the following detailed description.

#### Brief Description of the Drawings

Figure 1 is a perspective view of the top portion of a package incorporating a tamper-evident strip constructed in accordance with the principles of the present invention. For purposes of illustration only the package is shown as containing vacuum-packed wieners;

Figure 2 is a cross-sectional view taken along line 2-2 of Figure 1;

Figure 3 is a perspective view, partially cut away showing the recloseable seal being opened and the tamper-evident web partially separated;

Figure 4 is a cross-sectional end view of the package shown in Figure 3;

Figure 5 is a plan view of another embodiment of a tamper-evident strip; and

Figure 6 is a cross-sectional view of the top portion of a package incorporating the embodiment of the tamper-evident strip shown in Figure 5.

#### Detailed Description of the Invention

FIG. 1 illustrates a first embodiment of a tamper-evident recloseable package 10 constructed in accordance with the principles of the present invention. The packages 10 of the present invention are particularly suitable for sealing a food product, shown in the drawings as wieners 12, between two sheets or panels 14, 16 of flexible film material. The package panels 14, 16 forming the packages according to the present invention can be made

from a variety of materials including plastic films, multi-layered laminates or co-extrusions, thermoflexible materials and the like. A preferred plastic film for assembly of the packages of the present invention is one which is impervious to air, oxygen or moisture. When the package 10 is formed from a laminated construction, it is desirable to use a thin, inner layer which is impervious to air, oxygen or moisture in combination with an outer layer having a sufficient stiffness so that the laminate can function as a bag wall. For purposes of illustration and discussion, each package panel will be shown as a single heat-sealable lamina. In actual practice, each bag panel will likely be a laminate of two or more layers which will provide sufficient protection to the product (e.g., oxygen and moisture barriers) and which can form a peelable, hermetic seal at their inner surfaces. As is known in the art, a surface of "Saran", a vinylidene chloride-vinyl chloride copolymer, in contact with a surface of ethylene vinyl acetate can form such bonds.

The basic package 10 is formed by positioning the two film sheets in an opposing, abutting relationship and securing the film sheets 14, 16 on three sides by non-peelable seals 18 along the periphery or perimeter 20 of the package 10. When the periphery 20 of the package 10 is sealed, a package mouth or access area 22 is defined. The peripheral sealing can be accomplished by processes well known by the art such as heat sealing or adhesive sealing.

As best seen in FIGS. 2 and 3, the package also has a first, recloseable seal 24 illustrated as a conventional interengaging fastener assembly 26 such as a rib and groove fastener assembly. The interengaging fastener assembly 26 includes a length of a formed rib element strip 28 disposed proximate and generally parallel to the package mouth 22 on a face 30 of an interior package sidewall 32. The rib 50 projects outwardly from the rib element strip 28 a sufficient distance to be securely interengaged with and held by its confronting and complementary groove element strip 29. The separate, formed groove element strip 29 is disposed opposite the rib element strip 28 on the confronting face 31 of the opposing package sidewall 33. The groove element strip 29 includes two outwardly extending walls 52 which define a channel or groove 54 therebetween. The groove 54 is of sufficient width to firmly engage the rib 50 when the confronting interengaging fastener strips 28, 29 are pressed together. The interengaging fastener element strips 28, 29 are disposed a sufficient distance beneath the package mouth 22 to provide two opposing pull flanges 60, 61 on the opposing package sidewalls 32, 33. The extending profiles of the interengaging fastener element strips 28, 29 aid in gripping the pull flanges 60, 61 when

opening the package 10. Both the recloseable seal 24 and the interengaging fastener assembly 26 can take any number of various characteristics and configurations in addition to those described herein.

Beneath the recloseable seal 24, a peelable seal area 36 is provided proximate to the food product 12 and generally parallel to the recloseable seal 24. The peel seal area 36 may be formed by impressing the opposing package sidewalls 32, 33 with a heat seal bar (not shown) to thereby form a peelable seal 37 which is opened by digital forces between the package front panel 14 and the package rear panel 16. Alternatively, the peel seal area 36 can also be formed by application of an adhesive to secure the package panels together.

In an important aspect of the present invention, a separate, frangible web 38 of package film is provided which connects the interengaging fastener elements 28, 29 together to form a fastener-web assembly 39. The frangible web 38 has a preferred predetermined maximum extended width, W, which is less than the distance, L, between the top of the peel seal 37 and the interengaging fastener elements 28, 29 such that the web must be broken before the peel seal can be reached and/or is opened. However, it will be noted that the maximum extended width, W, of the web can be somewhat greater than L, but less than twice the distance L to achieve the benefits of the present invention.

The web 38 is provided with severance means, in the form of a frangible portion 44 of the web, illustrated as a line of weakening 40, which may take the form of a score line, perforations and the like, disposed in the general central portion 42 of the web 38 and generally parallel to the interengaging fastener elements 28, 29. The line of weakening 40 extends for the length of the frangible web 38 and defines two web portions 46, 47 when the web 38 is separated. The line of weakening 40 may be positioned somewhat offset from the center of the web 38 so that it can be more readily be determined from the exterior that the package 10 had been opened. Once the package walls have been pulled far enough apart to break the web 38 along the line of weakening 40, because the separated web portions 46, 47 remain attached to the package sidewalls even upon complete opening, there is no waste to discard when the package 10 is opened.

The frangible web line of weakening 40 may also serve as a fold line extending within the web central portion 42 so that when the web 38 is folded upon itself along the line of weakening, the frangible portion 44 (and the web itself) depends downwardly beneath the recloseable seal 24, when the package 10 is sealed. Because the frangible

web 38 is located entirely between the peel seal 36 and the recloseable seal 24, it will be appreciated that the tamper evident feature or the present invention requires no additional space on the package 10, particularly because it is completely interior of and does not extend beyond the recloseable seal 24.

In the package embodiment shown in FIGS. 1-4, the web 38 is illustrated as a separate film member 49 which is adhered to the confronting faces 30, 31 of the package opposing sidewalls 32, 33 at the mouth 22 of the package 10. The recloseable interengaging fastener element strips 28, 29 are then adhered to the opposing ends 51, 53 of a common face 48 of the web 38. The adherence together of both the web 38 and the recloseable seal interengaging fastener elements 28, 29 may be accomplished by any suitable means, such as heat sealing or by adhesive. In such a construction, the frangible web 38 can be easily added to a package having a recloseable seal with minimal packaging machine and/or material modifications.

Another embodiment of a recloseable, tamper-evident food product package 70 incorporating the principles of the present invention is shown in FIGS. 5-6. The basic structure of this second embodiment, such as the recloseable seal interengaging fastener elements 72, 73 and the peel seal 74 is the same as that described for the first embodiment. However, in this embodiment, the package 70 utilizes a one-piece, integral fastener-web assembly 76 wherein the opposed interengaging fastener elements 72, 73, illustrated as rib and groove elements, are formed integral with the frangible web 78. Typically, the interengaging fastener elements 72, 73 will be formed on the web 78 as it is extruded or otherwise manufactured. The fastener-web assembly 76 is also provided with severance means, in the form of a frangible portion 80 of the web 78, illustrated as a line of weakening 82, which may take the form of a score line, perforations and the like, disposed in the general central portion 84 of the web 78 and extending therein generally parallel to the interengaging fastener elements 72, 73.

When it is desired to open the package 10, the user grips the two pull flanges 60, 61 at the top of the package 10 and applies digital pull apart forces thereto. The recloseable interengaging fastener elements 28, 29 will separate and will pull the frangible web 38 up from its downwardly depending general v-shape to an extended shape. (See FIGS. 3 & 6). Further exertion or digital forces will separate the web 38 along its line of weakening 40, thereby allowing access to the peel seal 36, which then may be opened by the user upon application of additional digital forces. Therefore, the only way in which access is gained into the package 10 is

by breaking the line of weakening 40.

It will be appreciated that the frangible web 38 provides a tamper evident device for the package 10. In an unopened state, the frangible web 38 is unbroken and located below or interior of the recloseable seal 24. After the recloseable seal 24 has been opened to a sufficient extent to allow access to the peel seal 37, it will be apparent that access has been gained or attempted to be gained into the package. Therefore, an inspection as to whether there has been tampering with the package 10 or the peel seal 37 can be easily done. After the peel seal 36 has been opened by the purchaser, closing of the package for storage of the enclosed products 12 is accomplished by reclosing the interengaging fastener elements 28, 29. The inwardly directed orientation of the web portions 46, 47 reduces any possibility that they will interfere with closure of the fastener elements 28, 29.

The packages of the present invention can be formed in a variety of ways. The package 10 may be formed from two, separate package panels 14, 16 in which three sides thereof are initially appropriately sealed to define the outer limits of the package 10 or the package 10 may be formed from a continuous sheet of package film which is folded upon itself to define the bottom edge of the package, whereupon the side edges of the package may be appropriately sealed at predetermined intervals to define individual packages.

Once the basic package structure is formed and its opposing sidewalls 32, 33 are defined, the package mouth structure is completed. Typically, the multi-part fastener web assembly 35 or the one piece web assembly 76 may then be attached to the package mouth confronting faces 30, 31 in any conventional manner such as by heat sealing or adhesive. Prior to attachment, the web is scored or perforated to define its line of weakening 40, and the web is folded upon itself such that the central portion 42 of the frangible web 38 depends beneath the recloseable seal 24.

The package 10 may be filled with its products 12 either prior to or after completion of the package mouth. For example, where it is desired to fill the package 10 through its mouth 22, the peel seal 37 will be closed after filling the package with the product 12, and the fastener-web assembly 35 is subsequently attached to the upper opposing sidewalls 32, 33. In other instances, the package 10 may be filled with its intended product 12 through an open side or an open bottom of the package after the formation of the package mouth has been accomplished. In such cases, it is evident that the fastener-web assembly 35 will be attached to the package opposing sidewalls 32, 33 prior to filling of the package.

It will thus be seen that while certain embodi-

ments or the present invention have been shown and described, it will be obvious to those skilled in the art that changes and modifications may be made therein without departing from the true spirit of the scope of the invention.

## Claims

1. A recloseable, flexible package for hermetically sealing a food product or the like between two opposing package sidewalls and having tamper-evident means comprising, in combination:

two opposing package flexible sidewalls sealed together to form a flexible package having a mouth portion;

continuous recloseable flexible fastener means disposed along confronting surfaces of the two opposing package sidewalls, the continuous recloseable fastener means including opposed interengaging fastener elements disposed near said mouth portion of said flexible package;

tamper-evident means in the form of a frangible web extending between said continuous recloseable fastener means, the frangible web including a line of weakening disposed between said continuous recloseable fastener means, said frangible web being located interior of said continuous recloseable fastener means when said opposed interengaging fastener elements are engaged, said frangible web separating when said interengaging fastener elements are disengaged to reveal prior opening of said package; and

a hermetic peel seal adjacent to the intended access location of the food product and interior of said continuous recloseable fastener means.

2. A tamper-evident package for hermetically sealing products between generally opposing package panels having a peelable seal and a recloseable seal, the peelable seal securing the generally opposing package panels together at a peelable seal area, the peelable seal being openable with digital forces, the recloseable seal further securing the generally opposing package panels together at a recloseable seal area, the recloseable seal being openable with digital forces and recloseable,

tamper-evidence means for indicating that the generally opposing package panels have been separated at the recloseable seal the tamper-evidence means being contained between said generally opposing package panels substantially within an area between said recloseable seal and said peelable seal, said

tamper-evidence means including a web extending between said generally opposing package panels, the web being folded upon itself and depending interiorly of said recloseable seal when said package is initially sealed, said web further including severance means disposed between two ends of said web, said web at least partially restricting access to said products, said web separating into two separate web portions when digital forces are applied to said recloseable seal and providing evidence that said package has been opened.

3. A package according to claim 2, wherein said recloseable seal includes a recloseable seal member having opposed interengaging fastener elements, the interengaging fastener elements being disposed on opposing ends of said web, said web being folded upon itself in order to orient said interengaging fastener elements into alignment with each other and in order to define a folded portion of said web, the severance means being disposed on said folded portion and including a line of weakening disposed generally adjacent and parallel to said interengaging fastener elements of said web.
4. A flexible plastic package for enclosing a product between two opposing package sidewalls, the package being defined by a permanent seal along three edges of the package, the fourth edge of said package providing a package mouth for accessing said product, said package having a recloseable seal for securing the opposing package sidewalls together near the mouth of said package to close the mouth of said package, the recloseable seal including interengaging fastener elements which cooperate when engaged, to provide a recloseable seal for said package mouth, said package further including a peel seal portion between said recloseable seal and the package product, said peel seal portion including a hermetic peel seal disposed therein proximate to said product, a web extending between said opposing package sidewalls, said interengaging fastener elements being disposed on a common face and opposite ends of said web, said web being folded upon itself to define a web folded portion which extends interior of said recloseable seal and above said hermetic peel seal, the web folded portion including an area of frangibility disposed within the general centre of said web folded portion, said web providing a tamper evident barrier disposed between said recloseable seal and said peel seal, access to said peel seal and said product being accom-

plished when said web is broken along its area of frangibility, thereby indicating prior opening of said package.

5. A recloseable, flexible package for hermetically sealing a food meat product between two opposing package sidewalls and having tamper-evident means for indicating prior opening of the package, comprising, in combination:
  - two opposing, flexible oxygen-impermeable film, package sidewalls sealed together to define a flexible package sealed at three sides and having a fourth side containing a package mouth portion,
  - continuous recloseable fastener means providing a recloseable package seal disposed along confronting surfaces of the two opposing package sidewalls, the continuous recloseable fastener means including opposed interengaging fastener elements disposed along a common face and opposite ends of a fastener-web assembly extending between the interengaging fastener elements,
  - the web of said fastener-web assembly having a frangible portion disposed between said interengaging fastener elements, said web separating at the frangible portion thereof when said interengaging fastener elements are disengaged, said web thereby indicating prior opening of said package, said web frangible portion including a line of weakening disposed between said interengaging fastener elements, the line of weakening being generally parallel to said interengaging fastener elements, said web further being folded upon itself when said interengaging fastener elements are engaged, the fastener-web assembly having a preselected width in an extended position which is less than the distance between said recloseable seal and said peel seal,
  - said package further including a hermetic peel seal disposed proximate to the food meat product and between said interengaging fastener elements and said food meat product.
6. A package according to any one of claims 1 to 5, wherein said two opposing package sidewalls or panels are formed from a flexible oxygen-impermeable, laminated package film, one package sidewall having an inner surface laminate of Saran, the other package sidewall having an inner surface laminate of ethylene vinyl acetate.
7. A package according to any one of claims 1 to 6, wherein said generally opposing panels include oxygen-impermeable film and said package is for enclosing perishable food products.

8. A package according to any one of claims 1 to 7, wherein said package contains a meat food product.
9. A package according to any one of claims 1 to 8, wherein said frangible web and recloseable fastener means are extruded as a one-piece fastener-web assembly, the fastener-web assembly having a preselected width, said opposed interengaging fastener elements being disposed on a common face of and at opposite ends of said fastener-web assembly. 5 10
10. A package according to any one of claims 1 to 9, wherein said frangible web line of weakening is a line of perforations extending generally parallel to said opposed interengaging fastener elements. 15
11. A package according to claim 10, wherein said frangible web is folded upon itself along the line of weakening. 20
12. A package according to claim 11, wherein said frangible web is folded upon itself along said line of weakening into a general V-shape, such that said frangible web projects interiorly into said package above said peel seal. 25
13. A package according to any one of claims 1 to 12, wherein the width of said frangible web in an extended position is less than the distance between said opposed interengaging fastener elements and said hermetic peel seal. 30 35
14. A package according to any one of claims 1 to 13, wherein said interengaging fastener elements include interengaging rib and groove elements. 40
15. A package according to any one of claims 1 to 14, wherein said frangible web is adhered to said opposing package sidewalls by heat sealing. 45
16. A package according to any one of claims 1 to 15, wherein said frangible web is adhered to said opposing package sidewalls by adhesive means. 50 55

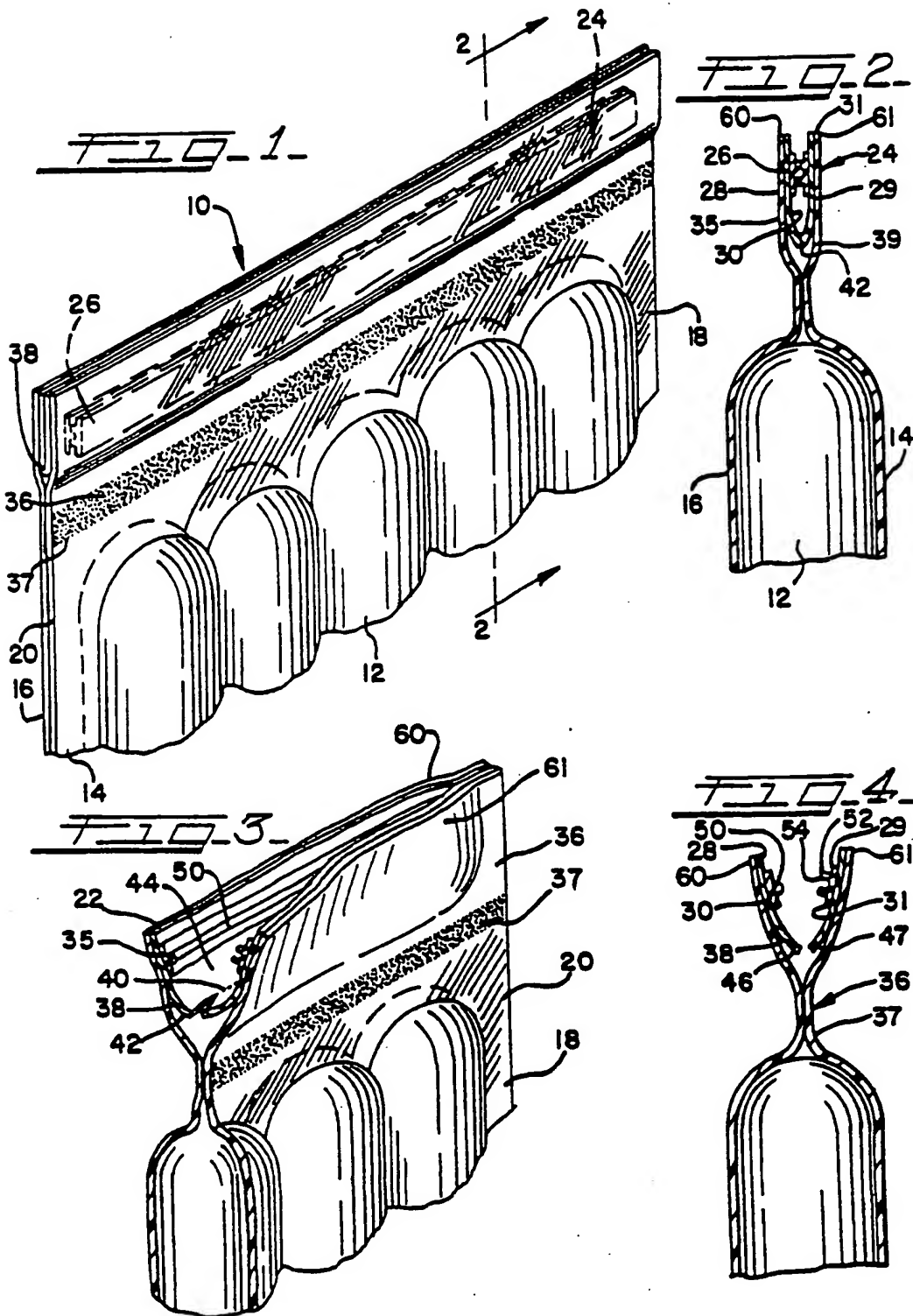




FIG. 5.

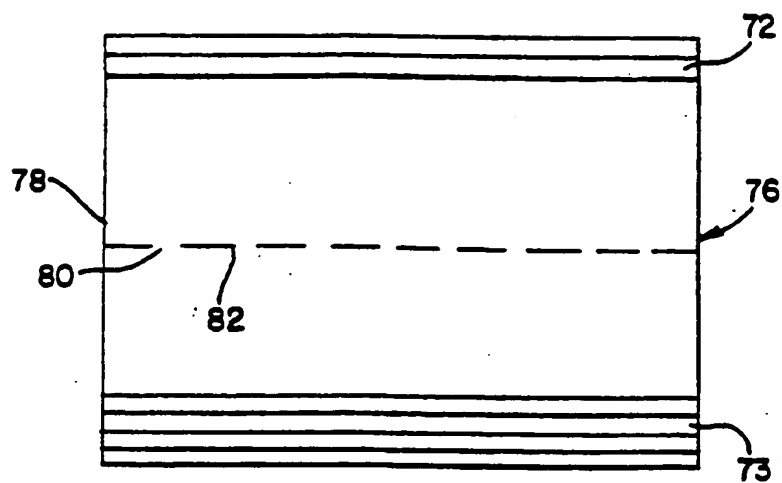
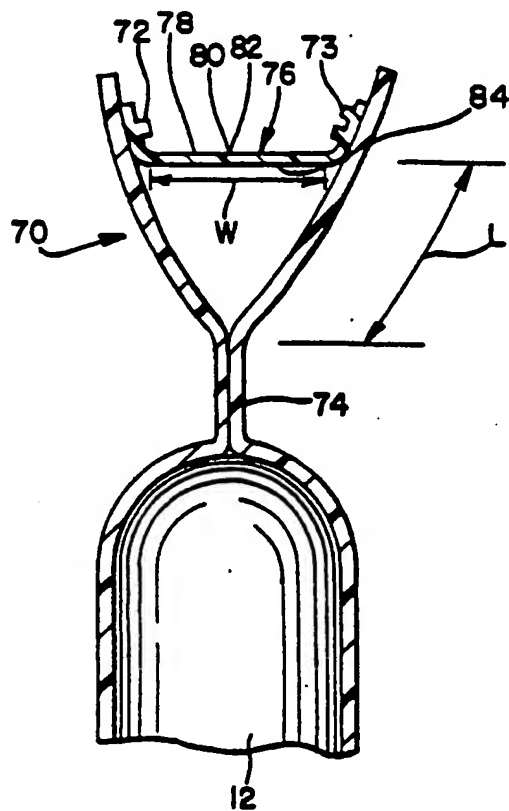


FIG. 6.





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# EUROPEAN SEARCH REPORT

Application Number

EP 91 30 1423

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
X	EP-A-0 302 144 (MINIGRIP EUROPE GMBH) * Figures 1,4,6; column 3, lines 4-33; column 5, lines 9-40 *	1-4,8-16	B 65 D 33/25
Y	-----	5-7	
Y,P	EP-A-0 405 895 (OSCAR MAYER FOODS CORP.) * Figures 1-3; column 4, lines 2-14; column 4, line 31 - column 5, line 28 *	5-7	
A	-----	1-4,8-16	
A	FR-A-2 417 385 (FLEXICO-FRANCE) * Figures 14,15,18; page 13, lines 5-36 *	1-4	
A	FR-A-2 546 481 (FLEXICO-FRANCE) * Figures 1,2; page 4, line 28 - page 6, line 35 *	1-4,6-16	
	-----		
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			B 65 D B 65 B B 31 B
Place of search		Date of completion of search	Examiner
The Hague		07 May 91	PERNICE,C.
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